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New Exotic Crane-Flies (Tipulidae: Diptera). Part IX

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The preceding part under this general title was published in ENTOMOLOGICAL NEWS, Vol. 75(1): 15-24. In the present paper I am continuing the study of the large and varied series of crane-flies that were taken by Dr. Fernand Schmid in various parts of India, discussing chiefly various species of the Hexatomine genus *Limnophila* Macquart that were taken in Assam and Sikkim. The types of the species are preserved in my personal collection.

Limnophila (*Prionolabis*) *mecocera*, new species.

Size medium (wing of male about 7 mm); general coloration of the entire body intensely black, subnitidous; antennae of male of unusual length, approximately two-thirds the wing, flagellar segments long-cylindrical, with abundant erect dark setae; knobs of halteres weakly infuscated; legs relatively long and slender, brownish black to black; wings brownish yellow, base clear yellow, disk with an inconspicuous pale brown pattern chiefly over the cord and outer end of cell *1st M*₂; cell *M*₁ lacking; male hypopygium with basal lobe of outer dististyle relatively small.

♂. Length about 5.5-6 mm; wing 7-7.5 mm; antenna about 4-4.8 mm.

Rostrum and palpi black. Antennae of male unusually long, about two-thirds the wing, black throughout; flagellar segments

¹ Contribution from the Entomological Laboratory, University of Massachusetts.

long-cylindrical, with abundant erect dark colored setae throughout the length, the single verticil only a little longer. Head black, subnitidous; anterior vertex broad.

Thorax uniformly black, pronotum and pleura slightly more pruinose than the subnitidous mesonotum; praescutal vestiture sparse but long and conspicuous. Halteres with stem yellow, apex of knob weakly darkened. Legs relatively long and slender; coxae and trochanters black, the remainder brownish black to black. Wings brownish yellow, base light yellow; vague narrow pale brown seams at Sc_2 , origin of R_s , R_2 , cord and outer end of cell $1st\ M_2$; veins light brown, a trifle darker in the patterned areas, light yellow in the brightened parts. Venation: Sc_1 ending nearly opposite the fork of R_s , Sc_2 near its tip; R_{1+2} and R_2 subequal; cell M_1 lacking; outer medial and cubital veins gently decurved to margin; $m-cu$ at or before midlength of M_{3+4} ; vein $2nd\ A$ gently sinuous.

Abdomen, including hypopygium, black. Male hypopygium with posterior border of tergite subtruncate, at midregion with two small lobes that are separated by a subequal emargination. Ninth sternite very strongly produced, margin convex, with several very long pale marginal setae. Outer dististyle slender, setiferous, at base with the usual suboval lobe that is provided with abundant setae of different sizes and a supplementary yellowed flange; inner style with the outer free portion unusually short and stout, the length about three or four times the diameter, near apex with a microscopic blackened tooth or tubercle. Gonapophysis appearing as a yellow blade, the apex triangularly dilated. Aedeagus relatively narrow, sinuous, apex beyond the subtending flange more or less decurved.

Habitat. INDIA (Sikkim). *Holotype*: ♂, Bakkim, 6,890 feet, April 12, 1959 (Fernand Schmid). *Paratopotypes*: 16 ♂♂, with the type.

Limnophila (*Prionolabis*) *mecocera* is generally similar to other regional species, including *L. (P.) coracina* Alexander and *L. (P.) fletcheri* Senior-White, differing evidently in the unusually long antennae of the male and in slight differences in the hypopygium.

***Limnophila pectinifera*, new species.**

Size medium (wing of female about 9 mm); general coloration of mesonotum brownish yellow, praescutal stripes slightly darker, pleura dark brown; antennae with scape dark brown, pedicel and flagellum light yellow; prothorax very small, mesonotal praescutum projecting cephalad; wings strongly infuscated, prearcular and costal fields more yellowed; a restricted dark brown pattern that includes the elongate stigma; medial branches pectinate, basal section of vein M_3 lacking.

♀. Length about 10–11 mm; wing 8–9 mm.

Rostrum and palpi brownish black. Antennae with scape dark brown, pedicel and flagellum light yellow, only the outer three or four segments more infuscated. First flagellar segment narrowed at base, dilated outwardly, succeeding segments lengthened, the outer ones more elongate, exceeding their verticils; terminal segment longer than the penultimate. Head brown, darker medially above; anterior vertex more than three times the diameter of scape.

Prothorax very small, dark brown. Mesonotal praescutum projecting cephalad to approach the posterior border of head, brownish yellow, with four slightly darker brown stripes; posterior sclerites of notum dark brown, sparsely yellow pollinose, more distinct on anterior mediotergite and posterior border of scutellum. Pleura and postnotum dark brown. Halteres dark brown, knobs more yellowed. Legs with coxae and trochanters dark brown, the former elongate; femora obscure yellow, the outer third infuscated; tibiae and tarsi brownish black; tibial spurs small. Wings strongly infuscated, the prearcular and costal fields more yellowed, this color continued outwardly to the wing tip; a restricted dark brown pattern, including the small elongate stigma and a smaller darkening at origin of R_s ; further darkenings include the cord, arculus, both outer medial forks and as tiny spots at ends of outer medial veins; veins yellow, brownish black in the patterned areas. Longitudinal veins of outer four-fifth of wing with trichia, including all of 1st A and the outer fifth or sixth of 2nd A . Venation: Sc_1 ending opposite fork of R_s , Sc_2 near its tip; R_{1+2} and R_2

subequal, R_s elongate; outer medial branches appearing pectinate, cell M_2 being open by the atrophy of basal section of M_3 ; $m-cu$ at or just beyond the fork of M . In the holotype the left wing has an adventitious crossvein at basal fourth of cell R_4 and a very weak remnant of the basal section of M_3 , the remaining wings of both available specimens normal.

Abdomen medium brown. Ovipositor with basal half of cerci darkened, the apices light yellow.

Habitat. INDIA (Assam). *Holotype*: ♀, Tairenpokpi, Manipur, 4,000 feet, May 31, 1960 (Fernand Schmid). *Paratopotype*: ♀.

The venation of this fly suggests that of certain species in the subgenus *Phylidorea*, such as the European *Limnophila* (*Phylidorea*) *aperta* Verrall, but the body structure indicates that actually the two flies are quite distinct. Attention is called to the anteriorly projecting mesonotal praescutum, suggesting the condition found in the genus *Conosia* van der Wulp.

***Limnophila iota*, new species.**

Size very small (wing of male 4.2 mm); mesonotal praescutum brownish yellow, patterned with dark brown, the posterior sclerites and pleura dark brown; outer flagellar segments of antennae with long verticils; femora yellow, the tips narrowly brownish black; wings whitish with a conspicuous spotted and dotted brown pattern; vein R_{2+3+4} greatly reduced to lacking; male hypopygium with the outer dististyle setiferous, at apex extended into a slender spine; gonapophysis appearing as a slender curved rod, the outer margin with two or three small appressed spinules.

♂. Length about 5 mm; wing 4.2 mm; antenna about 0.7 mm.

Rostrum and palpi black, the latter short. Antennae with scape black, pedicel brown, flagellum light brown; flagellar segments suboval, verticils conspicuous, those of outer segments very long, nearly three times the segments; terminal segment elongate, with about four very long subapical setae. Head light brown with a broad darker brown central stripe; setae porrect, their punctures blackened; anterior vertex broad, about five times the diameter of scape; eyes large, ommatidia conspicuous.

Pronotum large, obscure brownish yellow, scutum with three

brown spots. Mesonotal praescutum brownish yellow, patterned with dark brown, including two narrow intermediate and broader sublateral stripes, lateral margin darkened; pseudosutural foveae large and conspicuous, broadly oval, black; scutum brownish yellow, lobes patterned with dark brown; scutellum and postnotum darker brown, pleurotergite darker. Pleura dark brown to brownish black, dorsopleural region paler. Halteres weakly darkened, base of stem narrowly obscure yellow. Legs with coxae brownish black; trochanters testaceous yellow, with a darkened spot beneath; femora yellow, tips narrowly but conspicuously brownish black; tibiae and tarsi entirely light yellow; vestiture of legs relatively short, on femora slightly exceeding the diameter of the segment, the outer ones longer. Wings whitened, with a conspicuous brown spotted and dotted pattern; larger areas at origin of R_s and on anterior cord, the latter expanded cephalad over the forks of Sc and R_{2+3+4} to costa; areas at arculus, R_3 and R_4 relatively large; elsewhere with still smaller areas in all cells, including marginal spots, cell C with about a dozen such marks; veins yellow, very slightly darker in the patterned areas. Longitudinal veins beyond cord with small macrotrichia. Venation: Sc_1 ending just before fork of R_s , Sc_2 near its tip; R_s long, angulated at origin; R_{2+3+4} punctiform to virtually lacking, R_2 not apparent; cell M_1 subequal to or shorter than its petiole; $m-cu$ at near two-thirds M_{3+4} .

Abdomen, including hypopygium, dark brown. Male hypopygium with the tergal lobes broadly obtuse. Basistyle simple. Dististyles terminal, distal fourth of outer style narrowed into a slender spine, surface with a few strong setae; inner style narrowed to the pale obtuse tip. Phallosome with gonapophyses appearing as slender curved rods, narrowed to the acute tips, outer margin with a few small appressed spinules; aedeagus relatively short, straight.

Habitat. INDIA (Assam). *Holotype:* ♂, Telca, Cachar District, 62 feet, May 15, 1960 (Fernand Schmid).

Limnophila iota is the smallest member of a group of Oriental species that is most nearly allied to *Limnophila adicia*, new species, from which it is told most readily by the size, all details

of coloration of the body and wings, and the hypopygial structure, particularly the dististyles and phallosome.

***Limnophila adicia*, new species.**

Size medium (wing of male 7 mm); general coloration of mesonotal praescutum brownish yellow, with darker brown stripes; antennae with scape and pedicel intensely black, flagellum obscure yellow, basal segments very short and crowded; legs yellow, femoral tips abruptly black; wings light yellow with a conspicuous brown spotted and dotted brown pattern; R_s very long, R_{2+3+4} about two-thirds the basal section of R_s , cell M_1 approximately one-half its petiole; male hypopygium with outer dististyle narrowed gradually to the acute tip; tergal lobes pointed, tips narrowly obtuse.

♂. Length about 8 mm; wing 7 mm; antenna about 1 mm.

Rostrum and palpi black, the former small. Antennae with scape and pedicel intensely black, flagellum obscure yellow; proximal five flagellar segments very short, subglobular, succeeding segments longer, with increasingly elongate verticils. Head brown, with a sparse yellow pollen, most evident on the orbits; vertex with a conspicuous darker brown central stripe that is expanded on anterior vertex, with an anterior spur, on posterior vertex more narrowed.

Pronotum large, brown, sparsely pollinose, with conspicuous erect setae. Mesonotal praescutum brownish yellow with four dark brown stripes, the intermediate pair widely separated in front, confluent behind, with indications of a further median vitta, the sublateral stripes and margins brown; pseudosutural foveae black; scutum brownish yellow, each lobe with two dark brown areas; scutellum gray with a central brown line that extends cephalad on the scutum; postnotum dark brown. Pleura dark brown with a longitudinal black stripe on ventral anepisternum and pteropleurite. Halteres yellow, apex of knob weakly darkened. Legs with coxae and trochanters brownish black; femora yellow, tips abruptly and conspicuously black; tibiae yellow, the tips very narrowly brown; tarsi yellow, apices of individual segments darkened, terminal one uniformly brown; claws very long and slender. Wings light yellow, somewhat more saturated at base; a conspicuous dark brown pattern, including

sparse spots and very abundant brown dots in all cells, including *Sc*; the larger spots are at origin of *Rs*, anterior cord, and tips of veins R_3 and R_4 ; smaller brown marginal spots on veins, largest on *2nd A*; brown dots paler brown, generally subcircular in outline; veins yellow, darker in the patterned areas, including costa. Costal fringe relatively long; longitudinal veins beyond general level of cord with macrotrichia, lacking on *Sc* and all veins basad of cord. Venation: *Rs* very long, subequal to R_4 ; R_{2+3+4} about two-thirds the basal section of R_5 ; cell M_1 approximately one-half its petiole; *m-cu* at two-thirds M_{3+4} .

Abdomen, including hypopygium, brownish black. Male hypopygium with posterior border of tergite broadly emarginate, the lobes pointed with narrowly obtuse tips. Basistyle with the interbase a flattened dark blade that is expanded outwardly. Outer dististyle gently curved, narrowed gradually to the acute tip, the surface with long setae; inner style nearly as long, narrowed to the obtuse tip. Aedeagus slender, longer than the simple curved gonapophyses, the latter acute at tips, outer third with coarse appressed teeth.

Habitat. INDIA (Assam). *Holotype*: ♂, Leimatak, Manipur, 1,300 feet, May 30, 1960 (Fernand Schmid).

The most similar regional species is *Limnophila iota*, new species, which differs in the small size, coloration of the body, legs and wings, the venation, and especially in the details of structure of the male hypopygium.

***Limnophila* (*Afrolimnophila*) *bicoloripes*, new species.**

General coloration of praescutum medium brown, the posterior notal sclerites and the pleura darker brown; legs conspicuously hairy, femora medium brown, tips narrowly yellowed, tibiae and tarsi yellow; wings whitened, heavily patterned with dark brown, cell *C* yellow with a few narrow transverse dark brown dashes that are much narrower than the ground interspaces, cell *Sc* uniformly yellow.

♀. Length about 8 mm; wing 7 mm.

Rostrum, palpi and antennae black; scape elongate; flagellar segments long, subequal to their verticils, with additional dense white pubescence (terminal segments broken). Head dark

brown, sparsely pruinose; anterior vertex broad, nearly five times the diameter of scape.

Pronotum and pretergites testaceous yellow, darkened beneath. Mesonotal praescutum almost uniformly medium brown, the interspaces very poorly differentiated as slightly darker lines; posterior sclerites of notum darker brown. Pleura dark brown, the dorsopleural membrane slightly paler brown. Halteres short, stem dusky, knob large, dark brown. Legs with coxae dark brown; trochanters obscure yellow; femora medium brown, tips narrowly yellowed, tibiae and tarsi light yellow (hind legs broken); femora with long black setae, tibiae and basitarsi with similar yellow bristles. Wings with the restricted ground whitened, cells *C* and *Sc* light yellow, including the veins; cell *Sc* unmarked; remainder of disk with a very heavy brown pattern, heavily concentrated to virtually solid in outer radial field, elsewhere subequal in extent to the ground interspaces, with larger spots at origin of *Rs*, cord, tip of *2nd A* and at near two-thirds the length of cell *M*; the smaller areas more transverse in the cells before cord, small and dotlike in cell R_1 and beyond cord; veins obscure yellow, darkened in the patterned areas, costa beyond the stigma alternately yellow and dark brown. Longitudinal veins beyond cord with abundant macrotrichia, lacking on *Sc* and the veins basad of cord, small and inconspicuous on *R*. Venation: *Sc* long, Sc_1 ending about opposite one-third R_{2+3+4} , Sc_2 near its tip; *Rs* long; R_{2+3+4} subequal to R_{2+3} , the latter feebly angulated at origin; R_{1+2} and R_2 subequal; cell M_1 about twice its petiole; *m-cu* at near one-fourth to one-fifth M_{3+4} .

Abdomen dark brown. Ovipositor with cerci very slender, horn yellow, the outer half gently upcurved to the acute tip; hypovalvae long and slender.

Habitat. INDIA (Assam). *Holotype:* ♀, Mapum, Manipur, 5,000 feet, June 12, 1960 (Fernand Schmid).

The most similar species is *Limnophila* (*Afrolimnophila*) *raoana* Alexander, of western peninsular India (Bombay Presidency to the Nilgiri Hills), readily told by the wing pattern. It should be noted that in this latter species only the fore and middle femora are blackened, the posterior legs being uniformly yellow. It appears probable that a comparable condition will be

found in the present fly. Also the wings of the male presumably will be found to be much broader than in the female as figured, such a condition being found in *raoana*.

Elephantomyia (Elephantomyia) carbo sikkimensis, new subspecies.

Elephantomyia (Elephantomyia) carbo Alexander; Philippine Jour. Sci., 66: 326-327; 1938.

The specimens of typical *carbo* were from Mount Omei, Szechwan, China, taken at 9,000 feet, June 12, 1937, by Tsen.

♂. Length, excluding rostrum, 6.5-8 mm; wing 8-9.5 mm; rostrum about 5-6.2 mm.

General coloration black; head dark gray; halteres pale yellow; legs black, femoral bases broadly yellow, tarsi paling to yellow; wings yellow, heavily patterned with brown, including a broad seam at cord.

I am placing the present fly as a subspecies of *carbo* but it may well prove to represent a valid species. It differs from *carbo* in the larger size and conspicuously longer rostrum. Thorax dull brownish black. Abdomen brownish yellow, with a subterminal blackened ring, involving segments six to nine, the remainder of hypopygium yellow.

♂. Length, excluding rostrum, 6.5-10 mm; wing 8.5-11 mm; rostrum about 8.5-10 mm.

♀. Length, excluding rostrum, 8.5-11 mm; wing 8.5-11 mm; rostrum about 8-9 mm.

Habitat. INDIA (Sikkim). *Holotype*: ♂, Yedang, 10,600 feet, in *Rhododendron* association, June 9, 1959 (Fernand Schmid). *Allotopotype*: ♀, with the type. *Paratopotypes*: ♂♀, June 9-10, 1959. *Paratypes*: ♂♀, Bichu, 8,000-8,500 feet, July 14, 1959; ♂♀, Chachu, 11,500 feet, June 28-29, 1959; ♂♀, Chumzomoi Choka, 11,800 feet, in *Rhododendron* association, July 8, 1959; ♂♀, Kalep, 12,100 feet, in *Rhododendron* association, June 18, 1959; Phune Kongma, 11,150 feet, June 30, 1959; ♂♀, Shingba, 10,400 feet, June 30, 1959; ♂♀, Tsomgo, 12,500 feet, in *Rhododendron* association, August 26, 1959; ♂♀, Yagtang, 11,650 feet, in *Rhododendron* association, June 17, 1959; ♂♀, Zema, 8,900-9,100 feet, June 11-14, 1959 (all Fernand Schmid).